Current IMS Database

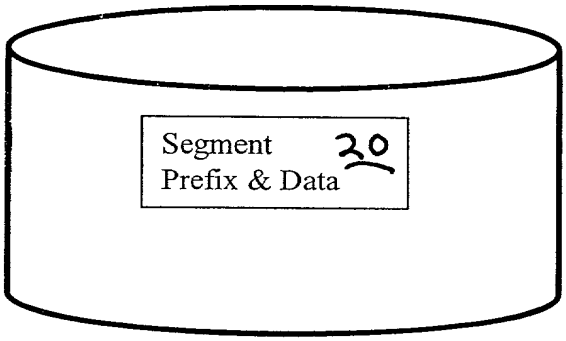

Fig 1A
(Prior Art)

Invention Database

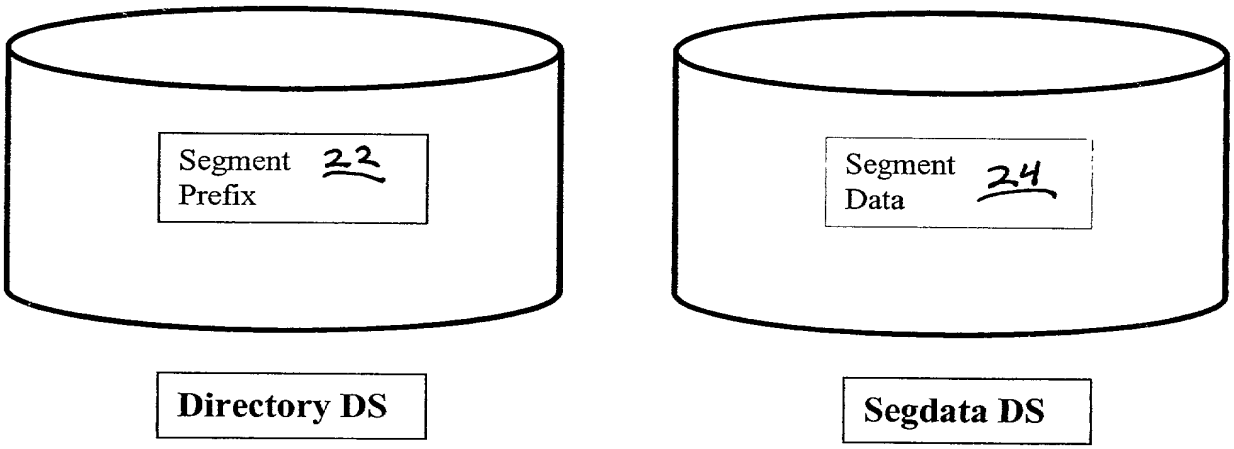

Fig 1B

Layout of Segment in Directory Dataset

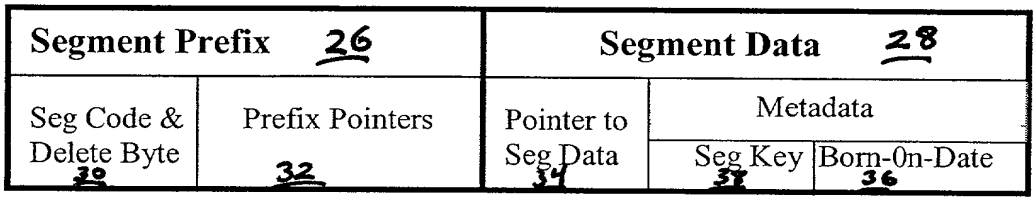

Figure 2A. Split Segment Composition – Prefix Portion with Metadata in segment data portion

Layout of Segment in Segdata Dataset

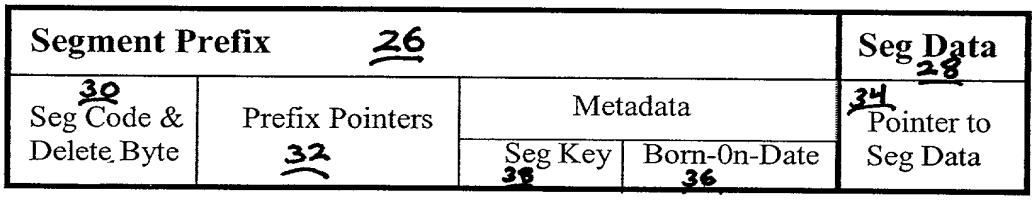

Figure 2B. Split Segment Composition – Prefix Portion with Metadata in segment prefix portion

Layout of Segment in Segdata Dataset

Segment Prefix 40	Segment Data 42	Trans-parent 44
Seg code & delete byte 46	User Data 48	Born on Date 50

Fig. 3

```
DBD     NAME=IVPDB1,ACCESS=(HIDAM,OSAM)

DIR     DD1=DFSIVD1,SIZE=2048,UOW=(500,50,10)

DATASET DD1=DFSIVD1A,DEVICE=3380,SIZE=2048
SEGM    NAME=A1111111,PARENT=0,BYTES=40,RULES=(LLV,LAST),PTR=(TB,CTR)
FIELD   NAME=(A1111111,SEQ,U),BYTES=010,START=00001,TYPE=C
FIELD   NAME=A9999999,BYTES=010,START=00011,TYPE=C
LCHILD  NAME=(A1,IVPDB1I),POINTER=INDX,RULES=LAST
LCHILD  NAME=(A1X,IVPDB1X),POINTER=INDX
XDFLD   NAME=AXXXXXXX,SEGMENT=A1111111,SRCH=(A9999999)
LCHILD  NAME=(C1X,IVPDB1Z),POINTER=INDX
XDFLD   NAME=CXXXXXXX,SEGMENT=C1111111,SRCH=(C9999999)

DATASET DD1=DFSIVD1B,DEVICE=3380,SIZE=4096
SEGM    NAME=B1111111,PARENT=A1111111,BYTES=(1000,50),                X
              RULES=(LLV,LAST),PTR=(TB)
FIELD   NAME=(B1111111,SEQ,M),BYTES=010,START=00003,TYPE=C
FIELD   NAME=/SXB1
LCHILD  NAME=(B1X,IVPDB1Y),POINTER=INDX
XDFLD..NAME=BXXXXXXX,SEGMENT=B1111111,SRCH=(B1111111),SUBSEQ=(/SXB1)

DATASET DD1=DFSIVD1C,DEVICE=3380,SIZE=8192
SEGM    NAME=C1111111,PARENT=B1111111,COMPRTN=(DFSKMPX0,DATA,INIT),   X
              RULES=(LLV,LAST),PTR=(TB),BYTES=(8000,50)
FIELD   NAME=(C1111111,SEQ,U),BYTES=010,START=00003,TYPE=C
FIELD   NAME=C9999999,BYTES=010,START=00011,TYPE=C

DIRGEN

DBDGEN
FINISH
END
```

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Figure 4A Sample HIDAM DBD

```
DBD     NAME=IVPDB2,ACCESS=HDAM,RMNAME=(DFSHDC40,4,1000)

DIR  DD1=DFSIVD2,UOW=(100,10)

DATASET DD1=DFSIVD2A,DEVICE=3380,SIZE=2048
SEGM    NAME=A1111111,PARENT=0,BYTES=40,RULES=(LLL,LAST),        X
              COMPRTN=(DFSKMPX0,DATA,INIT)
FIELD   NAME=(A1111111,SEQ,U),BYTES=010,START=00001,TYPE=C

DATASET DD1=DFSIVD2B,DEVICE=3380,SIZE=4096
SEGM    NAME=B1111111,PARENT=A1111111,BYTES=(1000,50),           X
              RULES=(LLV,LAST),PTR=(TB)
FIELD   NAME=(B1111111,SEQ,U),BYTES=010,START=00003,TYPE=C

DATASET DD1=DFSIVD2C,DEVICE=3380,SIZE=8192
SEGM    NAME=C1111111,PARENT=B1111111,COMPRTN=(DFSKMPX0,DATA,INIT),
        RULES=(LLV,LAST),PTR=TB,BYTES=8000
FIELD   NAME=(C1111111,SEQ,U),BYTES=010,START=00001,TYPE=C

DIRGEN

DBDGEN
FINISH
END
```

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Figure 4B Sample HDAM DBD

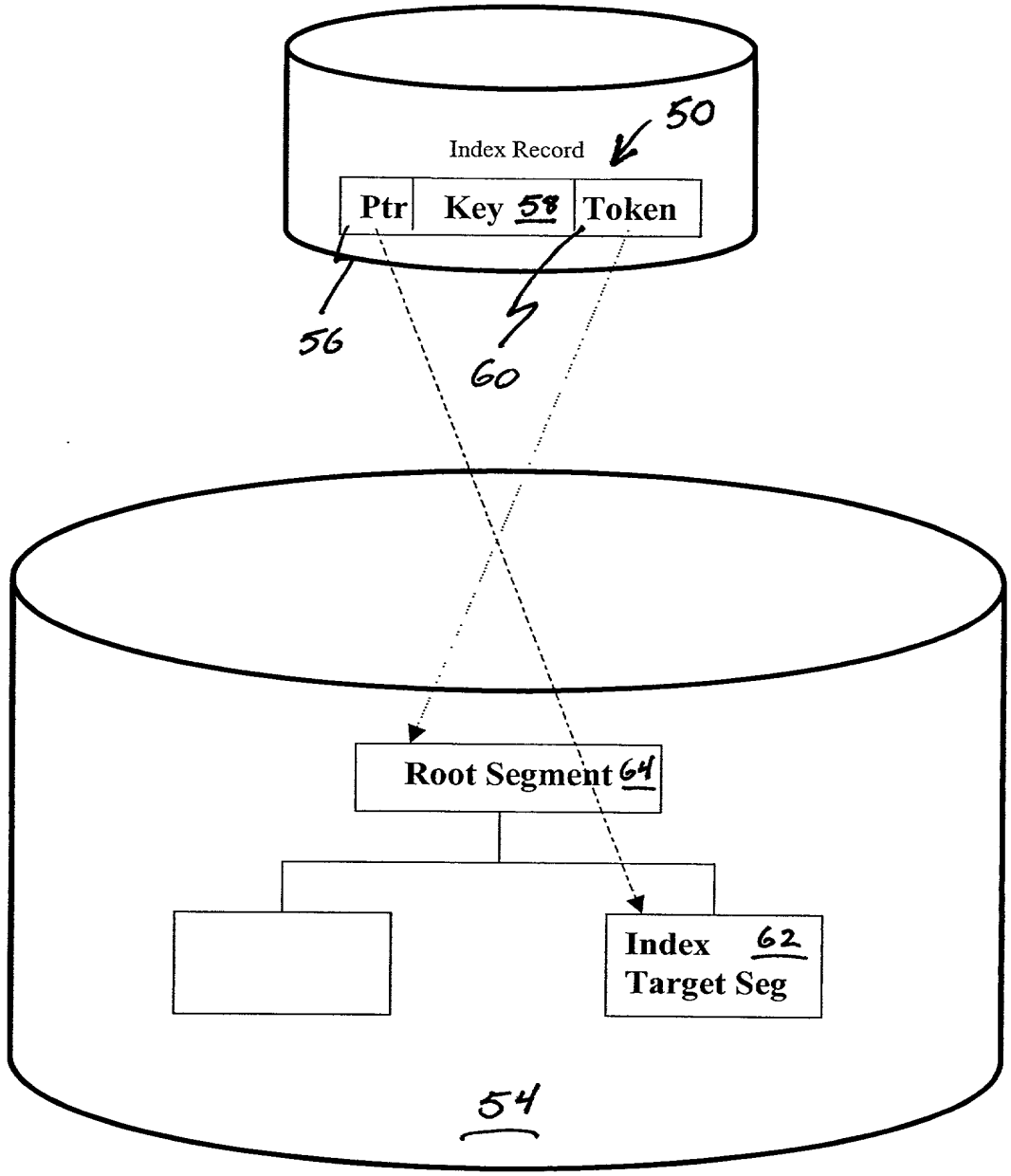

Figure 5 Secondary Index Architecture

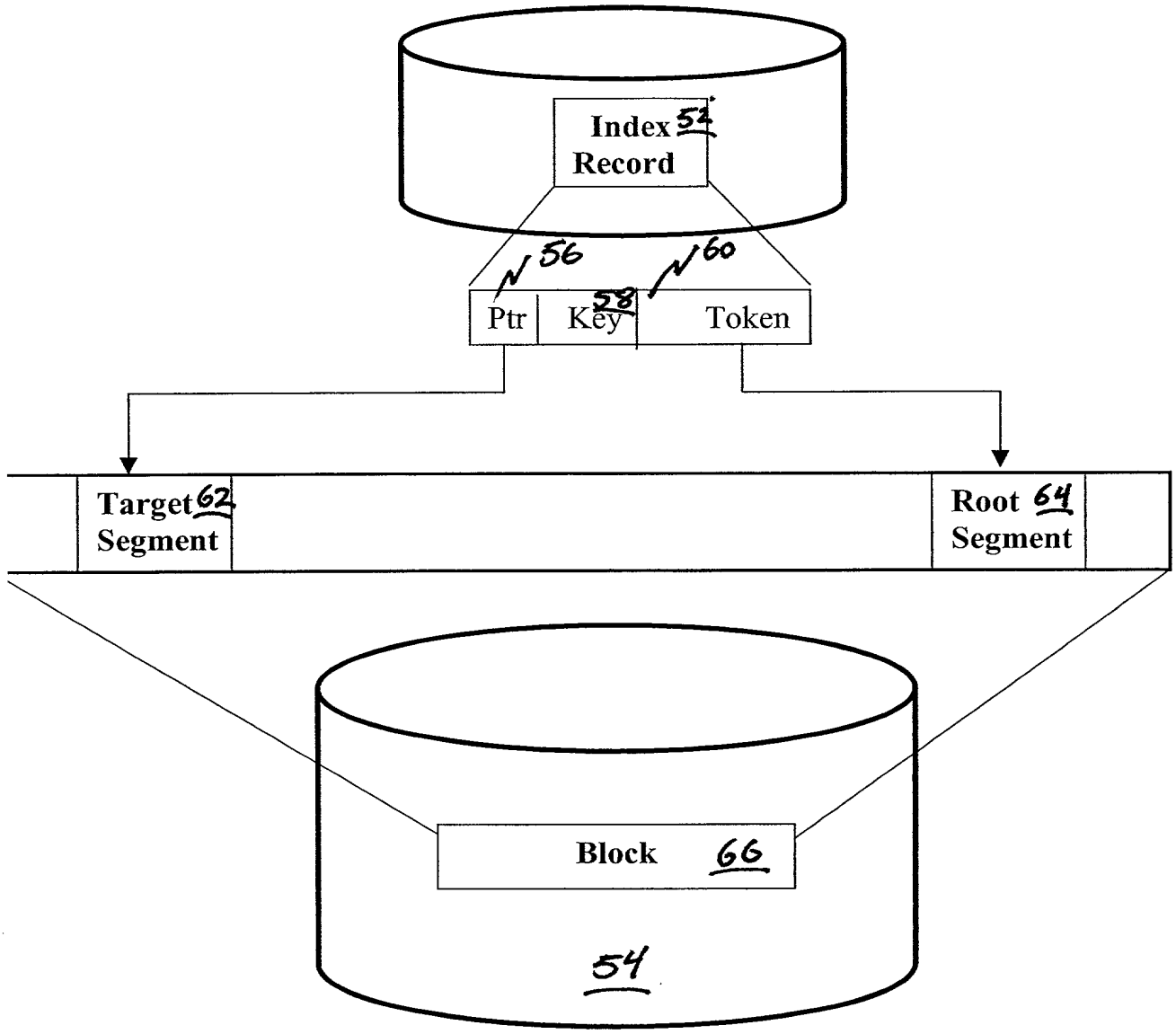

Figure 6 Secondary Index Before Reorganizing

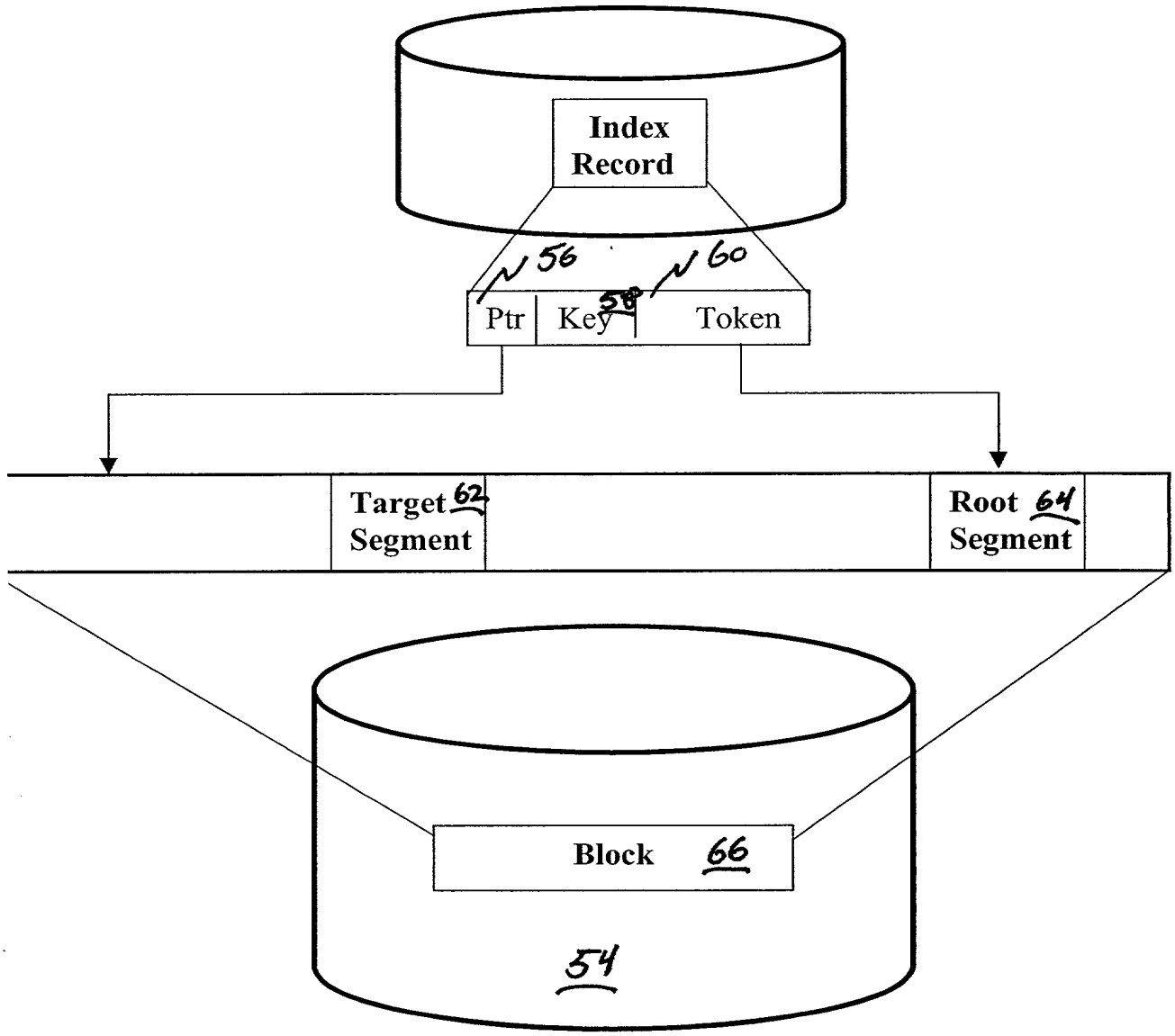

Figure 7 Secondary Index After Reorganizing

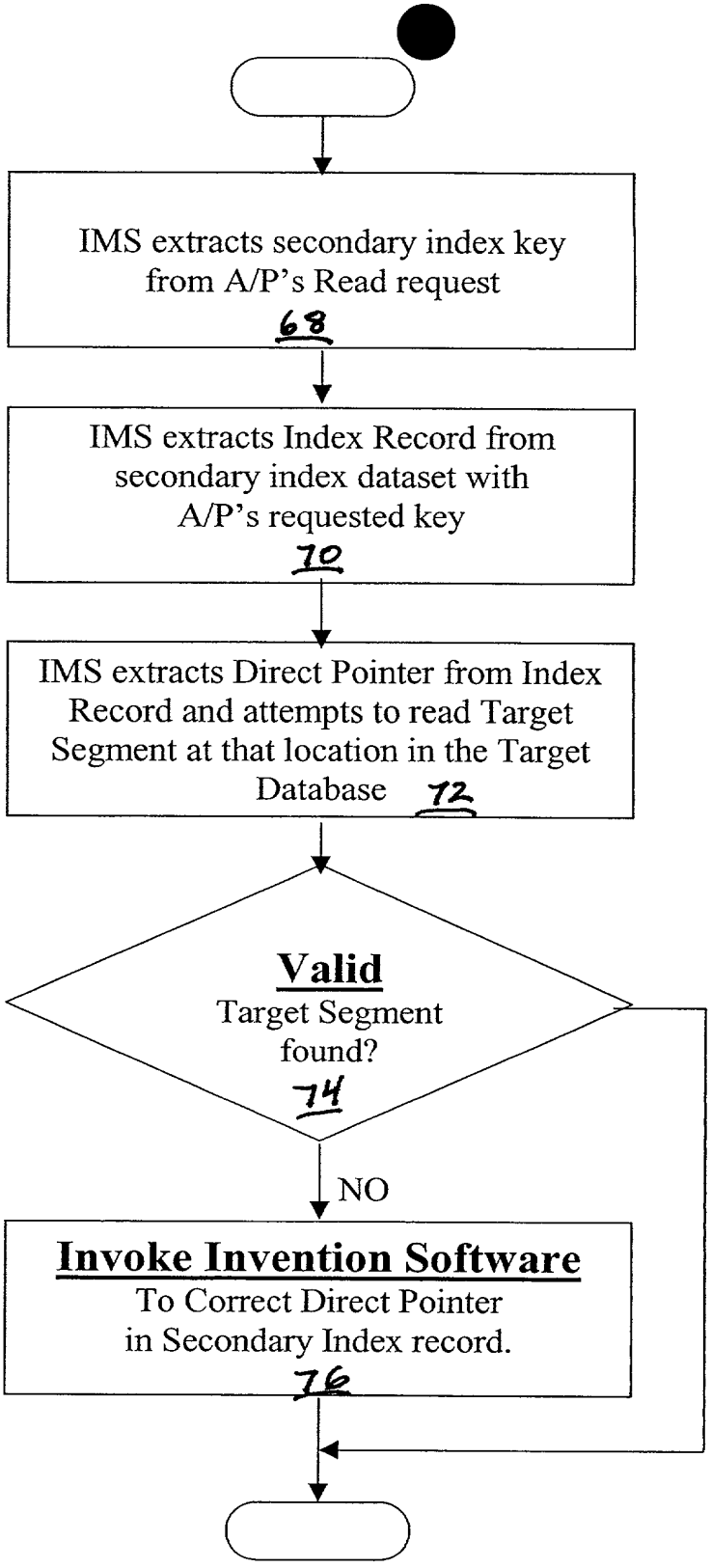

Figure 8 Retrieving a Target Segment via a Secondary Index

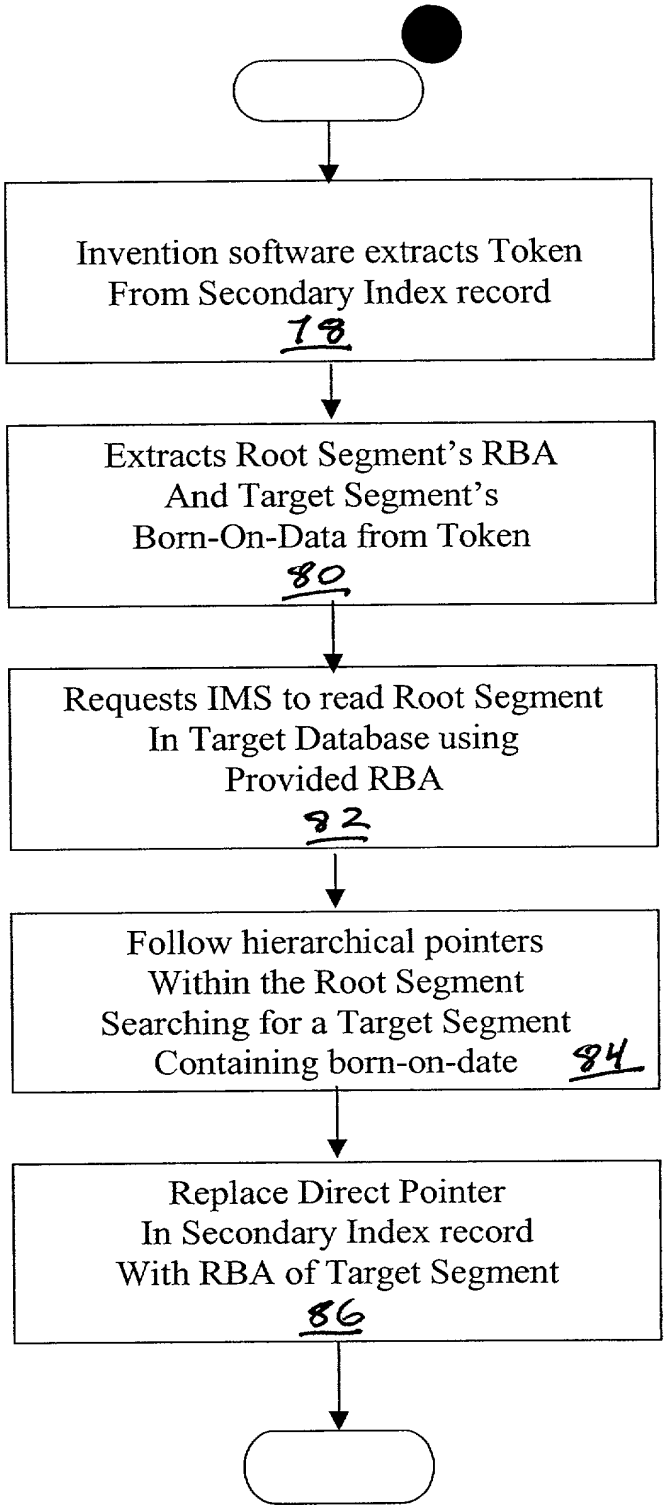

Figure 9 Correcting Direct Pointer in a Secondary Index

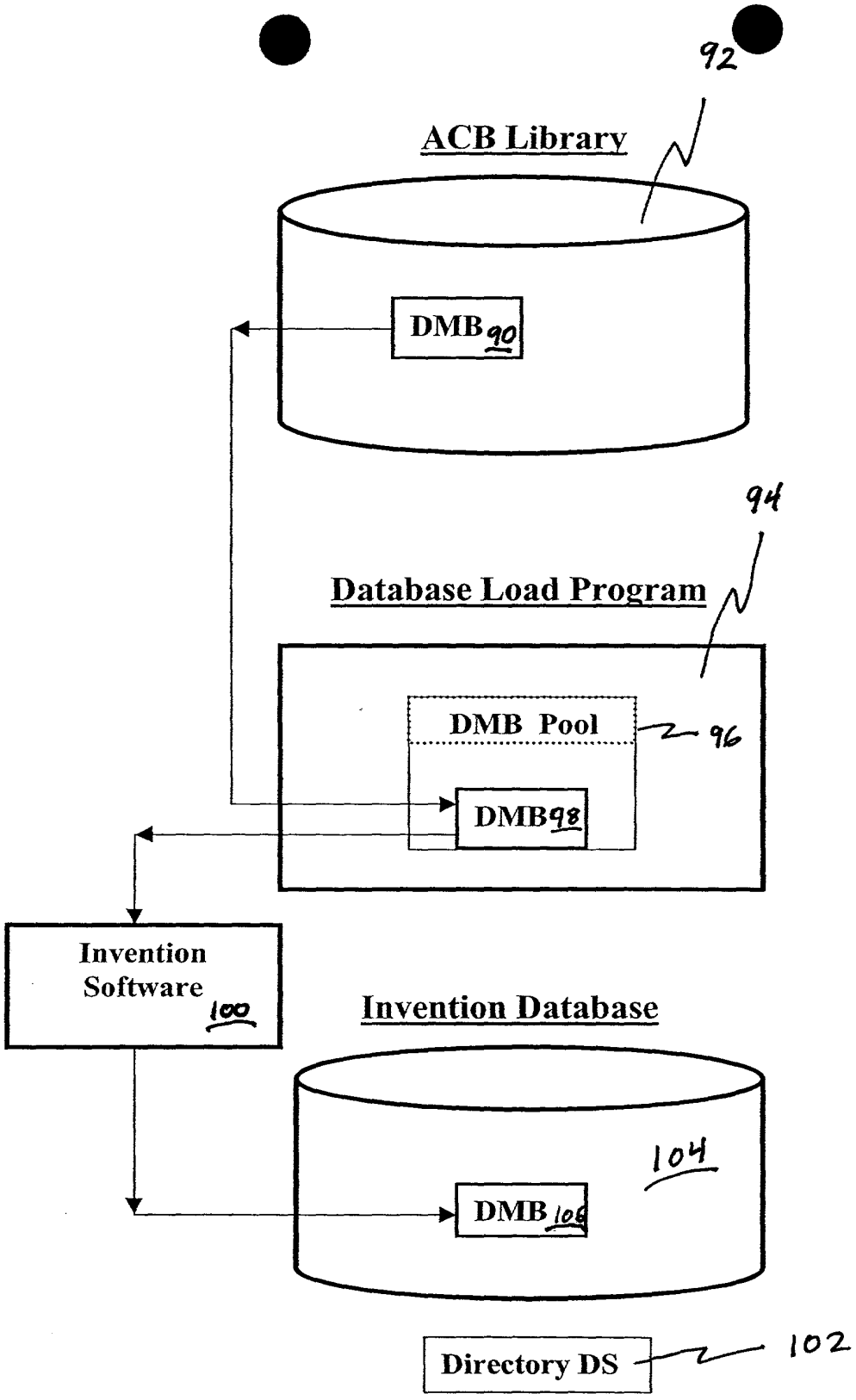

Figure 10 Saving the Database Definition at DB Load Time

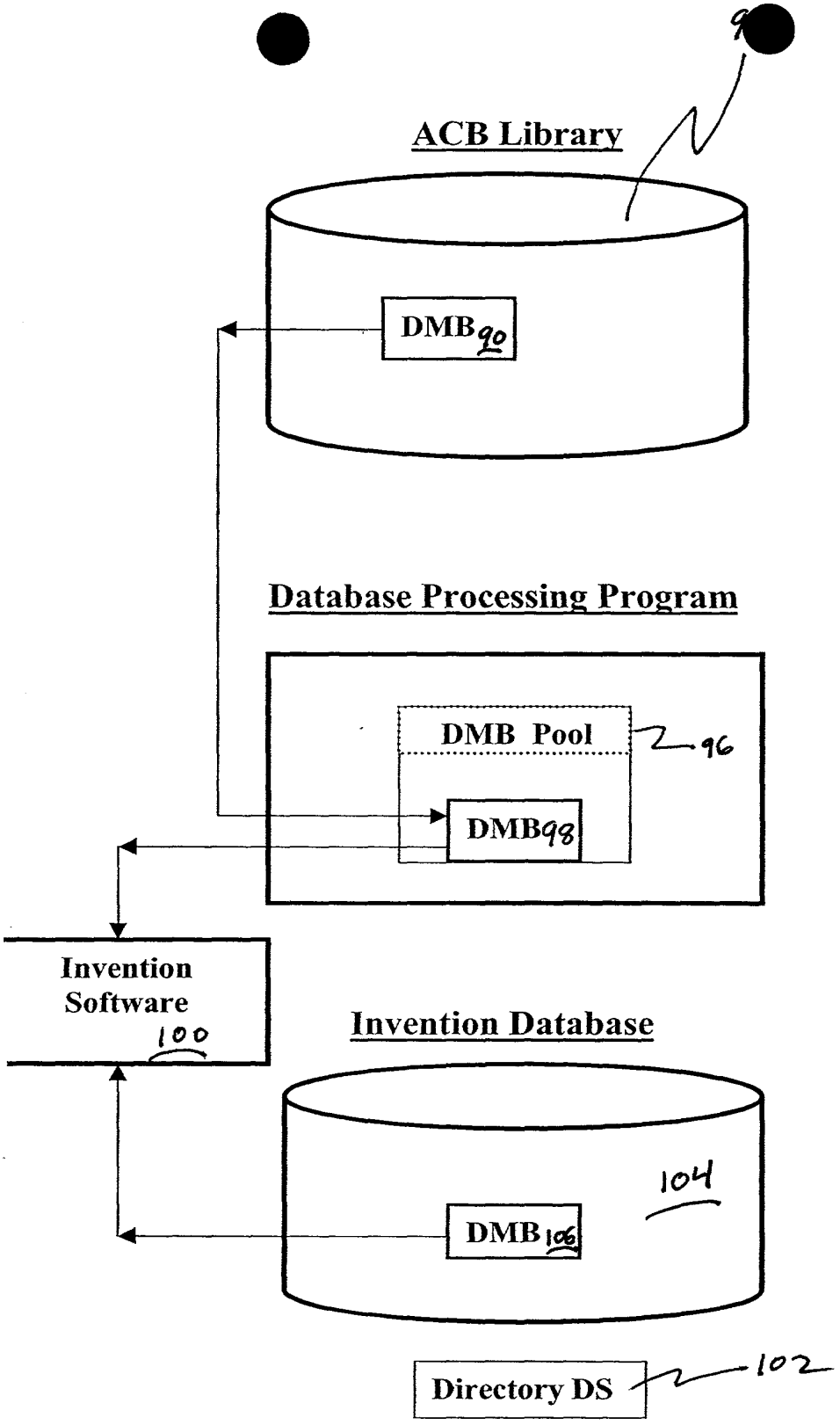

Figure 11 Checking the Database Definition at DB Processing Time

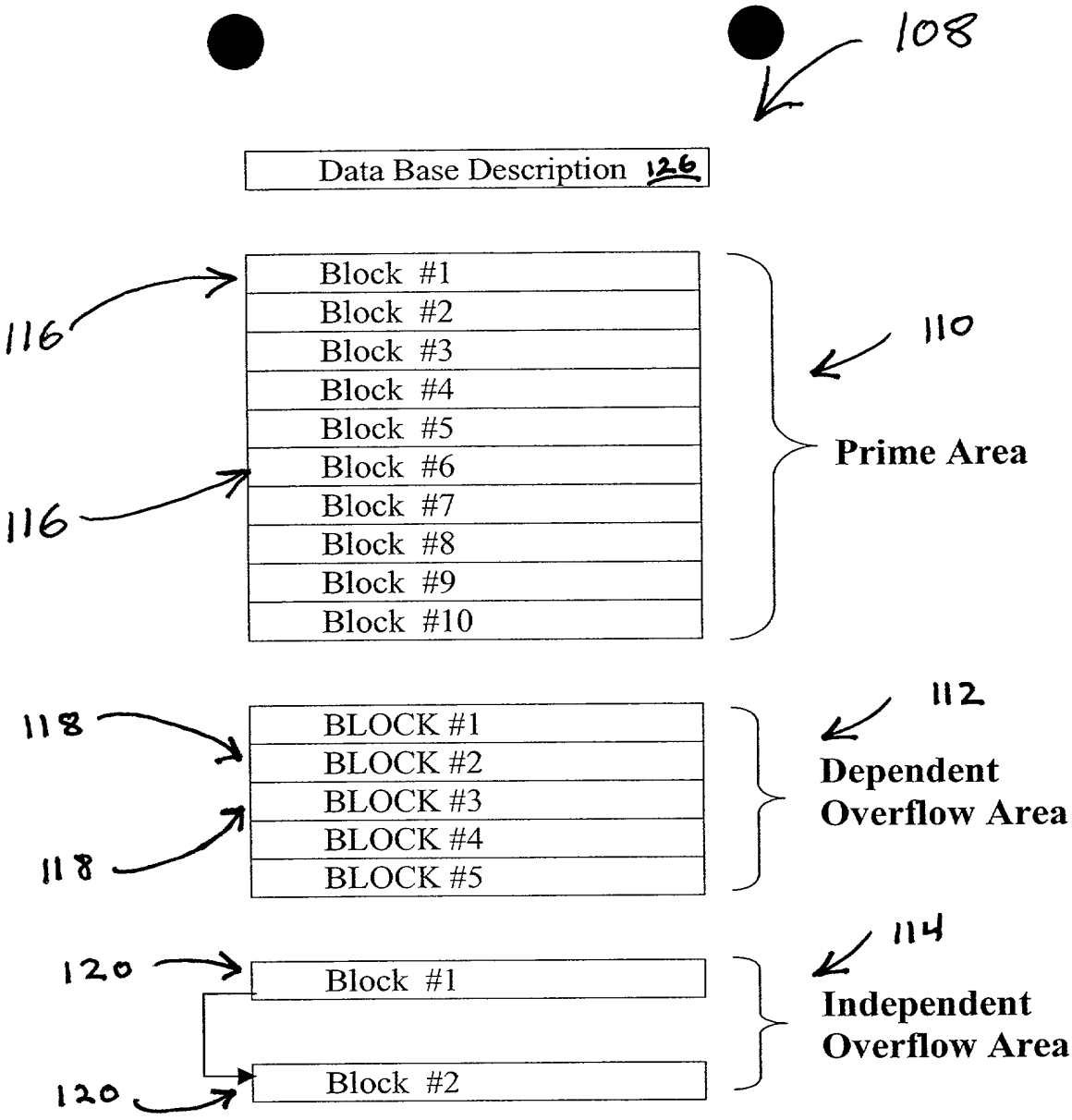

Figure 12. Unit Of Work (UOW) Architecture

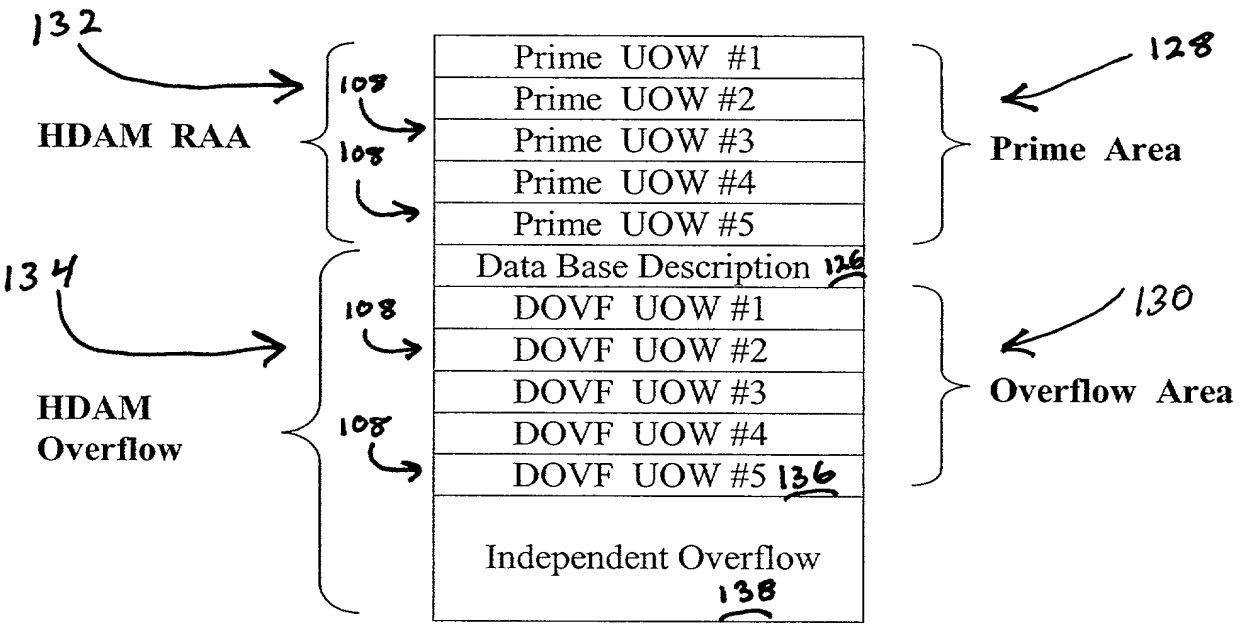

Figure 13. HDAM UOW Architecture

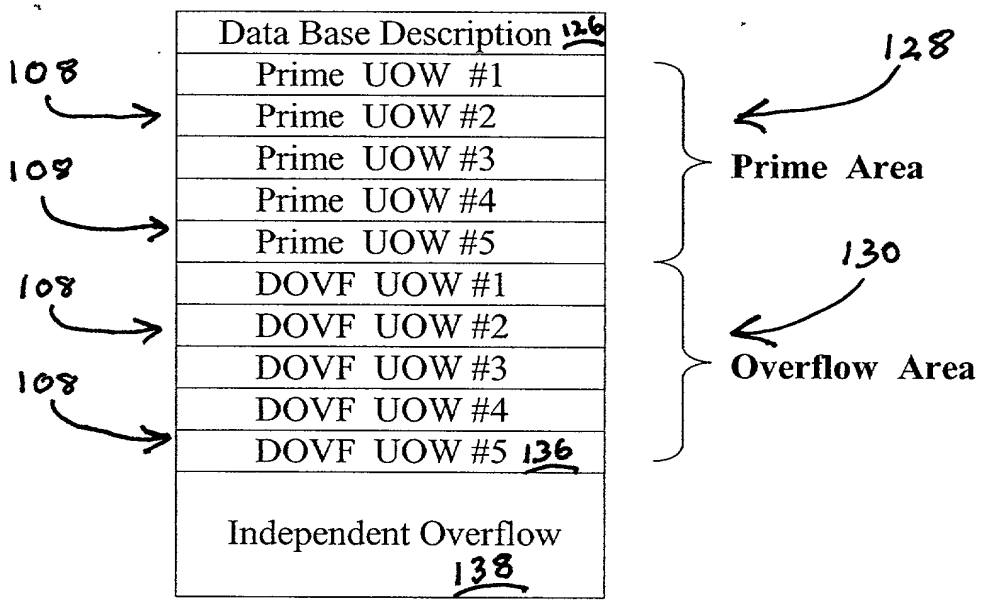

Figure 14. HIDAM UOW Architecture

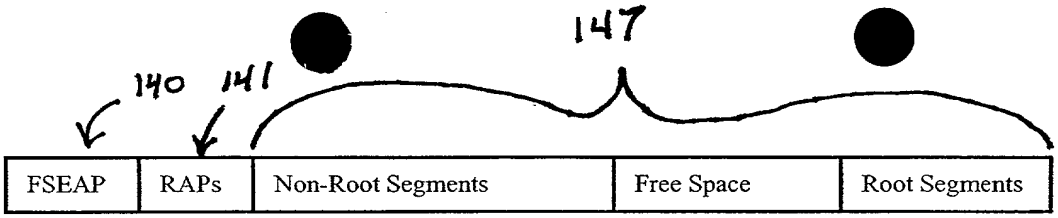

Figure 15. Prime & DOVF Block Composition

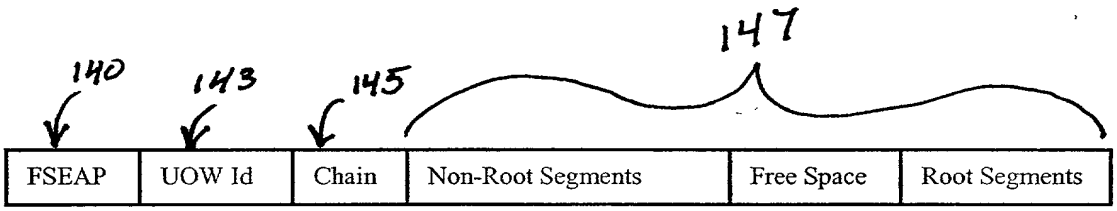

Figure 16. IOVF Block Composition

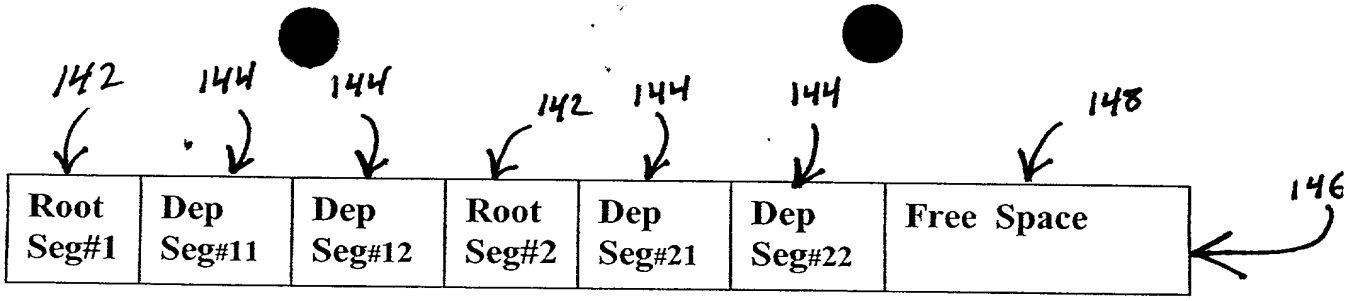

Figure 17 Block Composition Using IMS' Space Management

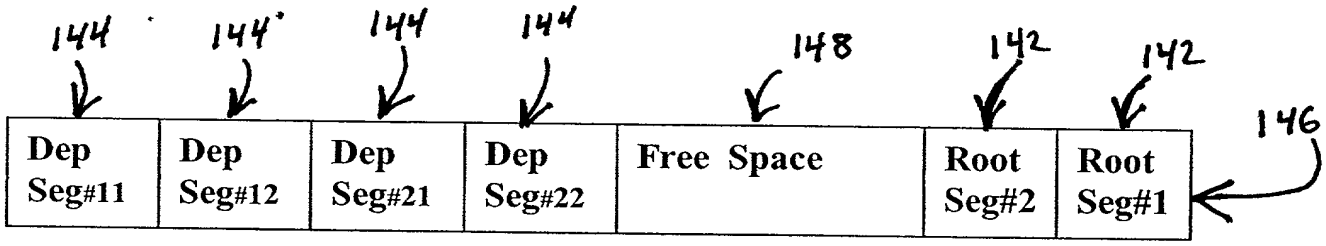

Figure 18 Block Composition Using Invention's Space Management

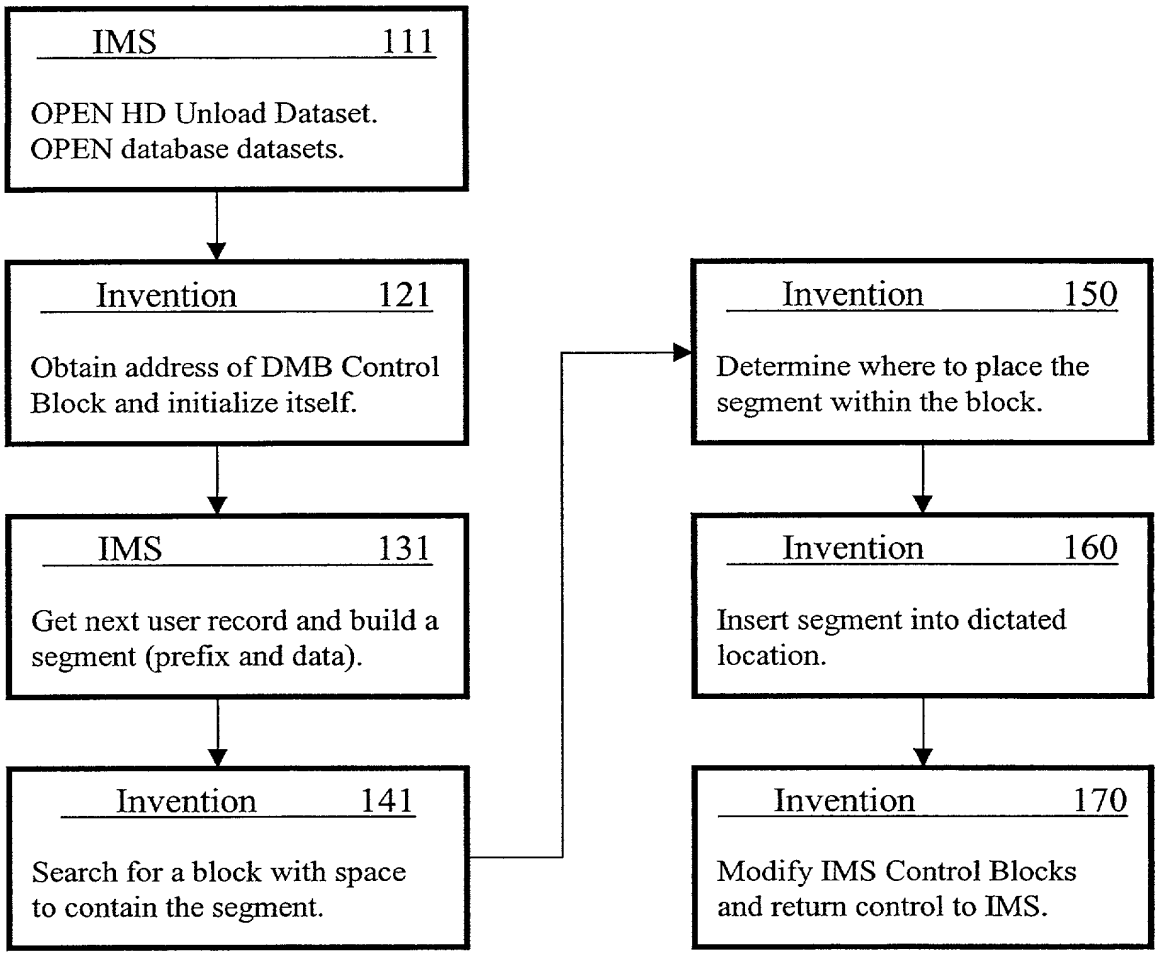

Figure 19 Space Management at Database Load Time

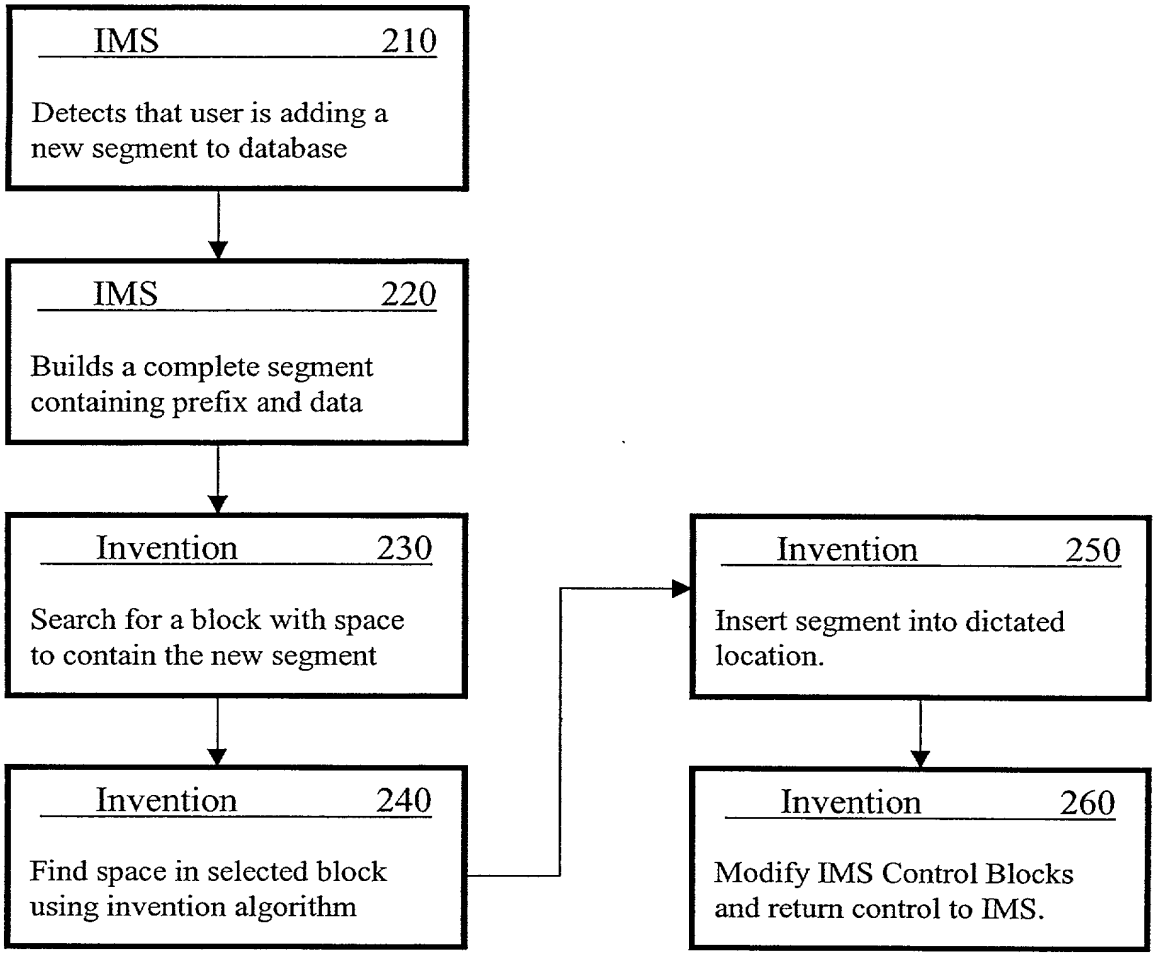

Figure 20 Space Management at Database Update Time

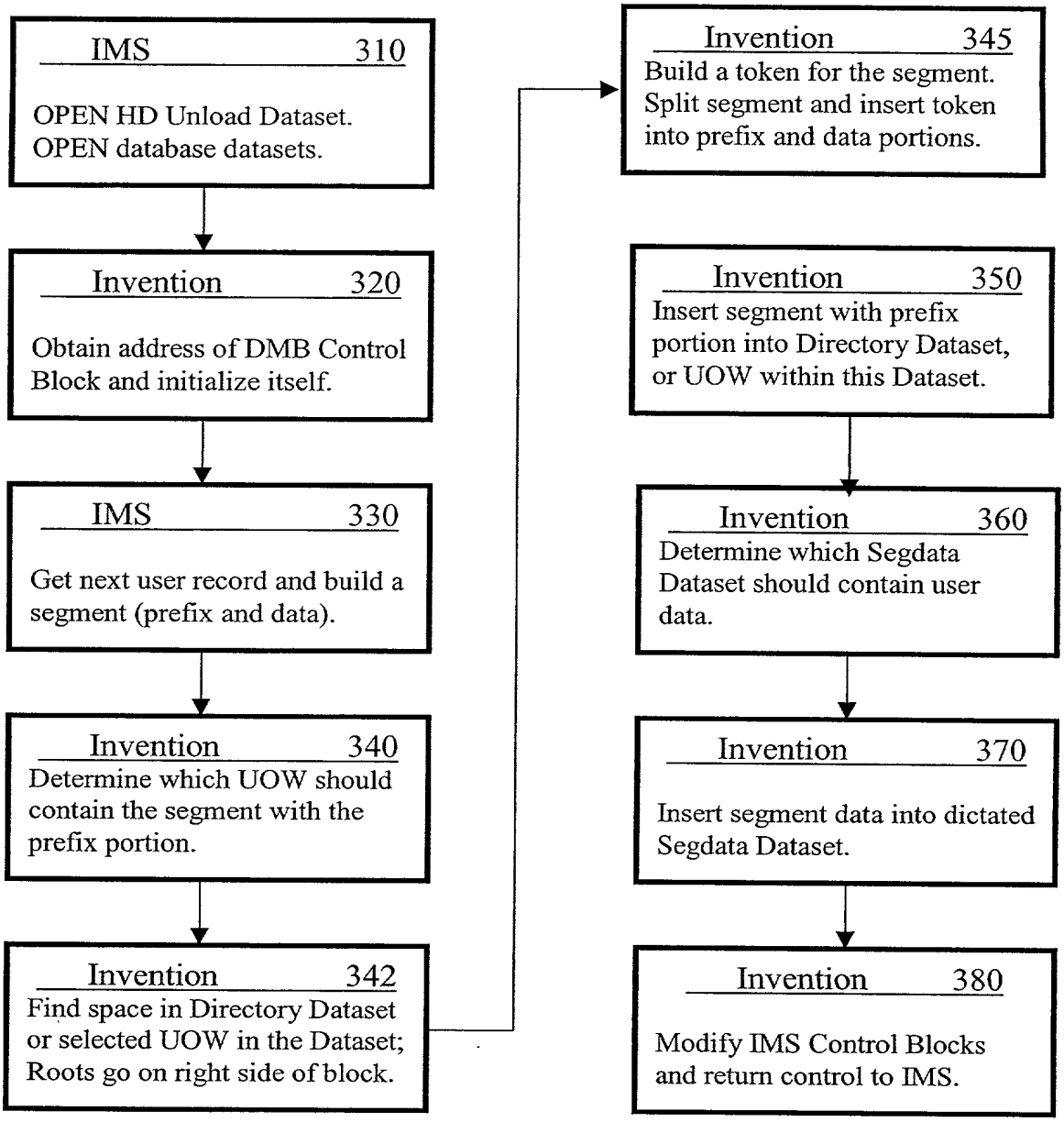

Figure 21. Space Management at Database Load Time

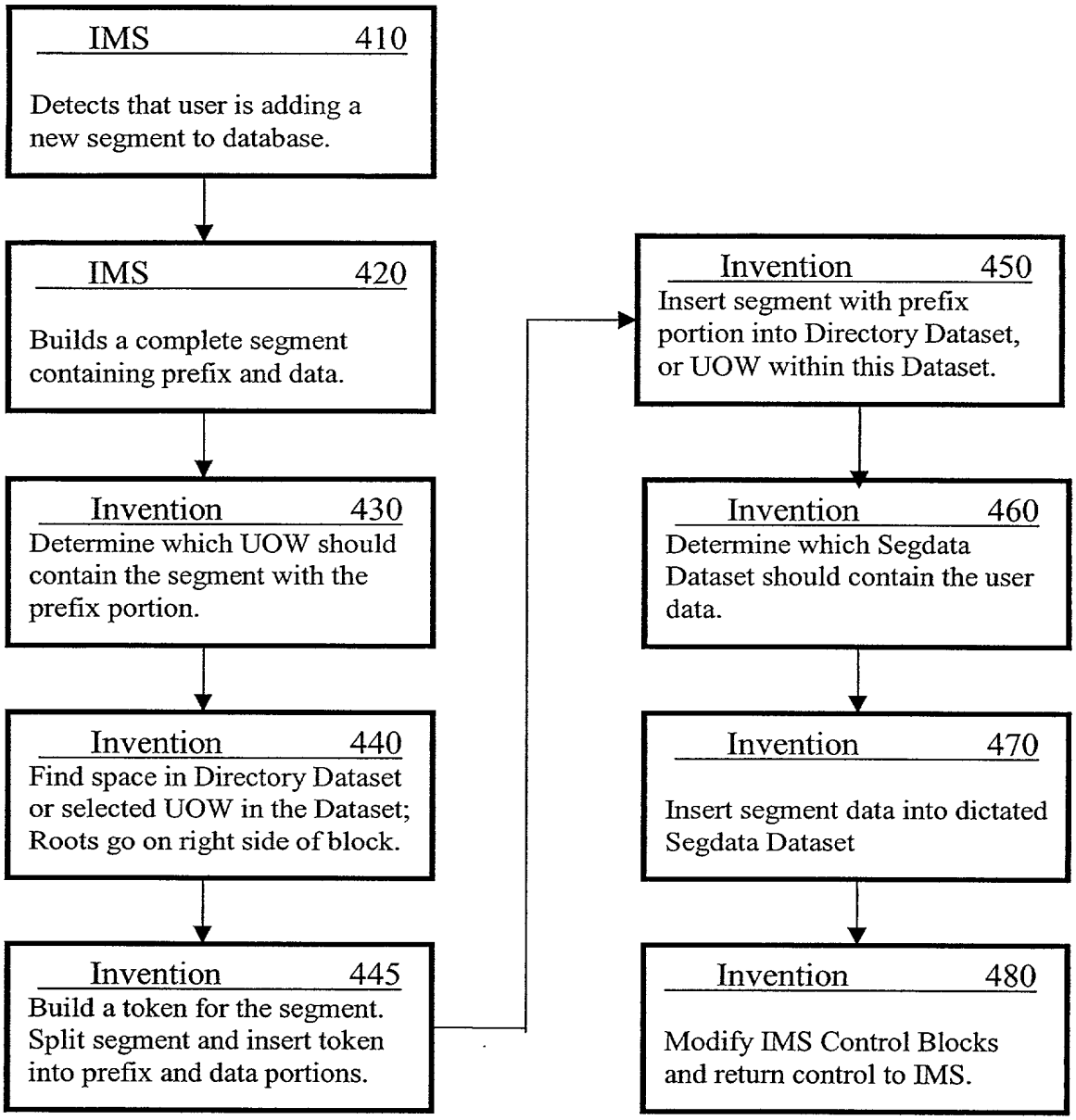

Figure 22. Space Management at Database Update Time